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APPENDIX:

1. (Amended) A composition comprising: [a complex of]

a) a first single stranded nucleic acid;

b) a second single stranded nucleic acid, wherein said first and second nucleic acids are complementary to each other; and

c) at least one recombinant [isolated] Rad52 protein from a higher eukaryote.

2. (Amended) A composition according to claim 1 wherein [said complex mediates the annealing of] said first and second nucleic acids are perfectly [to a] complementary [second single stranded nucleic acid]to each other.

3. (Amended) A composition according to claim 1, 2, 5 or 23 wherein said Rad52 protein is [a mammalian Rad52 protein]labeled.

4. A composition according to claim 1 wherein said Rad52 is a human Rad 52 protein.

5. (Amended) A composition according to claim 1 [further comprising a double stranded]wherein said first and second nucleic acids [comprising second and third single stranded nucleic acids, wherein both said first and said third nucleic acids] are minimally complementary to [said second nucleic acid]each other.

6. (Amended) A composition according to claim 1, 2, 5 or 23 [further comprising a second single stranded nucleic acid complexed with isolated Rad52 protein from a higher eukaryote]wherein at least one of said first and second nucleic acids are labeled.

14. (Amended) A method of screening for a bioactive agent involved in [homologous recombination]nucleic acid binding comprising:

a) contacting:

i) a candidate bioactive agent;

ii) a first single stranded nucleic acid; and

iii) isolated Rad52 protein from a higher eukaryote; and

b) screening for binding of said candidate agent and said Rad52 to said first nucleic acid.

16. (Amended) A method of screening for a bioactive agent involved in [homologous recombination]nucleic acid binding comprising:

a) adding:

i) a candidate bioactive agent;

ii) a first single stranded nucleic acid; and

iii) isolated Rad52 protein from a higher eukaryote to form a mixture; and

b) screening said mixture for altered [biological]nucleic acid binding activity, when compared to the [biological]nucleic acid binding activity of said composition in the absence of said candidate agent.

17. (Amended) [A]The method according to claim 14, 16, 18, 19, or 20 wherein said first nucleic acid and said isolated Rad52 are complexed prior to the addition of said candidate agent.

18. A method of screening for a bioactive agent involved in nucleic acid annealing comprising:

a) adding:

i) a candidate bioactive agent;

ii) a first single stranded nucleic acid; and

iii) isolated Rad52 protein from a higher eukaryote to form a mixture; and

b) screening said mixture for altered nucleic acid annealing activity, when compared to the nucleic acid annealing activity of said composition in the absence of said candidate agent.

19. A method of screening for a bioactive agent involved in strand exchange comprising:

a) adding:

i) a candidate bioactive agent;

ii) a first single stranded nucleic acid; and

iii) isolated Rad52 protein from a higher eukaryote to form a mixture; and

b) screening said mixture for altered strand exchange activity, when compared to the strand exchange activity of said composition in the absence of said candidate agent.

20. A method of screening for a bioactive agent involved in homology scanning comprising:

a) adding:

i) a candidate bioactive agent;

ii) a first single stranded nucleic acid; and

iii) isolated Rad52 protein from a higher eukaryote to form a mixture; and

b) screening said mixture for altered homology scanning activity, when compared to the homology scanning activity of said composition in the absence of said candidate agent.

21. The method according to claim 14, 16, 18, 19, or 20 wherein said Rad52 protein is mammalian Rad52 protein.

22. The method according to claim 21 wherein said Rad52 protein is human Rad52 protein.

23. A composition according to claim 1 wherein said first and second nucleic acids are substantially complementary to each other.

24. A composition according to claim 1 further comprising Rad51.

25. A composition according to claim 1 further comprising RPA.

26. A composition according to claim 1 wherein said Rad52 protein is at least 90% homologous to about amino acid 36 to about amino acid 185 of human Rad52 protein.

27. A composition according to claim 1, 2, 5, or 23 wherein said Rad 52 protein is labeled.

28. The method according to claim 14, 16, 18, 19, or 20 wherein said Rad52 protein is labeled.